REMARKS

These remarks are responsive to the Office Action, mailed February 17, 2009. Currently claims 1, 3-17, 19-26 are pending with claims 1, 7, and 17 being independent. Claims 2 and 18 have been previously cancelled. Claim 17 has been amended to correct a typographical error in response to the Examiner's objection (see, Office Action, page 2). No new matter has been added.

35 U.S.C. 103

In the February 17, 2009 Office Action, the Examiner rejected claims 1, 3-6, 17, and 19-25 under 35 U.S.C. 103(a) as being unpatentable in view of various combinations of U.S. Patent No. 5,778,395 to Whiting et al. (hereinafter, "Whiting"), U.S. Patent Publication No. 2003/0131278 to Fujibayashi (hereinafter, "Fujibayashi"), U.S. Patent No. 6,560,615 to Zayas et al. (hereinafter, "Zayas"), U.S. Patent Publication No. 2003/0070001 to Belknap et al. (hereinafter, "Belknap"), and "Efficient Distributed Backup with Delta Compression" to Burns et al. (hereinafter, "Burns").

In the Office Action, the Examiner stated that Whiting discloses all elements of the claims except that it "does not explicitly teach two or more repositories are configured to store a replica of a file, wherein a storage location and a number of replicas in each repository can be configured to change over time." The Examiner stated that Fujibayashi discloses this element. (Office Action, page 3). The Examiner further stated that Whiting does not teach "and further configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred." *Id.* The Examiner stated that Zayas discloses this element. The Examiner further stated that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Whiting et al. "by the teachings of Fujibayashi, since Fujibayashi teaches 'by locating data backups remotely, a customer can survive a disaster by restoring data using backed up data mirrored in a remote location that was unaffected by the disaster' (see paragraph [0002])" and "by the teaching of Zayas et al., since Zayas et al. teaches 'insertion and removal of entries in the MFL are performed by the storage system. When the first of a file's data and metadata bits are turned on, the storage system adds the file to the MFL. In this way a file is added only once to

the MFL' (see 7:40-45)". (Office Action, page 4). Applicants respectfully disagree and traverse these rejections.

Claim 1 recites, *inter alia*, a data protection system including a fileserver configured to contain shares of data and to be connected with a repository, wherein two or more repositories are configured to store a replica of a file, wherein a storage location and a number of replicas in each repository can be configured to change over time; the fileserver includes: a filter driver operative to intercept input or output activity initiated by client file requests and further configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred; a file system in communication with the filter driver and operative to store client files; the filter driver is configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, wherein the protection policy is configured to be uniquely defined for each share of data on the fileserver.

In response to the Examiner's rejection, Applicants reiterate and incorporate herein by reference Applicants' arguments submitted on February 6, 2008 and on November 21, 2008. In addition to the previously submitted arguments, Applicants respectfully traverse Examiner's rejections as follows.

As understood by Applicants, Whiting relates to a system for backing up files from disk volumes on multiple nodes of a computer network to a common random-access back storage means. (Whiting, Abstract). As previously stated by Applicants and admitted by the Examiner (Office Action, page 3), Whiting fails to disclose two or more repositories configured to store a replica of a file, wherein a storage location and a umber of replicas in each repository can be configured to change over time, as recited in claim 1. This is because Whiting's files are backed up from disk volumes on multiple nodes of a computer network to **a common random-access backup storage means**, typically a disk volume. (Whiting, Col. 5, lines 3-6). (emphasis supplied). Hence, Whiting performs its backup operations to a single location only and is not equipped to store *multiple replicas of a file*, which is contrary to the present invention. (emphasis supplied). Whiting teaches away from storing duplicate copies of a file and instead, stores only a **single copy** of a file. (Whiting, Col. 5, lines 8-11). (emphasis supplied). In contrast, *two or more repositories* store a *replica* of a file, as recited in claim 1. (emphasis supplied). Further, Whiting

backs up its data to the same location over time, i.e., its \BACKUP\USERS location (Whiting, Col. 7, lines 8-19). Since Whiting is not capable of storing multiple replicas of files in different locations, it fails to disclose that the number of replicas stored in each repository can be configured to change over time as well, as recited in claim 1. Instead, Whiting backups a single file to a single location (i.e., Whiting's common random access backup storage means).

Additionally, it appears that in Whiting clients have their data replicated to a single local fileserver, which is the destination of date. Whereas, an advantage of the present invention is that it incorporates file servers that are the source of data to be backed up by having historical versions of data stored into a local site repository and a peer remote repository. Further, Whiting "walks" the file system looking for changed, new, modified or deleted files, whereas the present invention incorporates a filter driver that can, in real time, capture changes as they occur so that there is no need to "walk" file system. The present invention is further configured to maintain the history of all changes to a file over time, within the specified retention period and does not implement single-instance storage, contrary to Whiting. The present invention further allows a backup administrator to specify how many replicas of data need to be maintained in onsite and offsite repositories. Another advantage of the present invention is that for each share on each source fileserver, a protection policy is created that includes backup frequency, retention/purging and version management rules. Such is not present in Whiting. Further, the present invention is clearly advantageous over Whiting in providing efficient disaster recovery by having a backend collection of peer repositories distributed across multiple sites. Whiting does not appear to disclose a remote repository.

Contrary to the Examiner's suggestion, Fujibayashi fails to cure the deficiencies of Whiting with regard to this element. As understood by Applicants, Fujibayashi discloses a method for remote backup. (Fujibayashi, Abstract). Fujibayashi's system includes a local host having a local storage device coupled to a remote host having a remote storage device. (Fujibayashi, para. [0019]). Fujibayashi's local storage is a primary storage device for storing data generated and/or used by the local host and its remote storage includes a secondary storage device for storing backup of primary storage device. *Id.* Fujibayashi's control manager engine performs backup of the primary storage and of the secondary storage independently using snapshots and forms multiple generations of snapshot backups of primary storage and second

storage devices over time. (Fujibayashi, para. [0020]). As such, Fujibayashi is concerned with simply performing backups by taking repetitive snapshots of the disk subsystem local and remote storages, wherein snapshots at each storage are taken independently and new snapshots replace older snapshots (Fujibayashi, para. [0023]). This means that loss of a disk system will result in a loss of all snapshots. However, Fujibayashi fails to address the problem of having storage location and number of replicas in each of its storage locations changing over time, which is solved by the present invention. It appears that Fujibayashi performs a one-time load of the primary and secondary storages and then performs localized snapshots of each storage. Thus, Fujibayashi's system is similar to the one disclosed in Whiting, whereby Fujibayashi's remote storage is Whiting's backup location. As such, Fujibayashi either alone or in combination with Whiting is not capable of changing the storage location and a number of replicas in each repository over time, contrary to the recitation of claim 1.

In addition, Fujibayashi appears to be a primary disk storage system that can take "snaps" at two sites independently to maintain some historical versions over time, which means that a loss of primary storage facilities would cause loss of all such "snaps" as well. An advantage of the present invention is that it is configured to separate fileservers and repository nodes, where data is to be protected. The present invention maintains repository copies on separate disk drivers located on separate servers and transmits backup data continually between repositories.

Further, one having ordinary skill in the art having the knowledge of Whiting would not look to Fujibayashi to solve the problem of having two or more repositories that are configured to store a replica of a file, wherein a storage location and a number of replicas in each repository can be configured to change over time, as recited in claim 1. Whiting teaches away from maintaining multiple copies of files and thus, its combination with Fujibayashi would produce a system that includes a primary storage and a backup directory, where both storage locations perform independent snapshots of files located there. However, the ability to change the storage location and the number of replicas in each repository cannot be changed over time, contrary to the recitation of claim 1.

Further, as previously stated in Applicants' November 21, 2008 Amendment and Response, Whiting's system creates four types of files during backup: new, unchanged, updated, and modified. (Whiting, Col. 7, lines 59-65). Each time a backup set of files is migrated,

Whiting's solution searches for matching files for each new or updated file. (Whiting, Col. 8, lines 8-16). Further, during backup, Whiting creates and modifies files over network on the backup storage. (Whiting, Col. 7, lines 8-13), however, Whiting fails to disclose that these created or modified files are replicas of a single file. In contrast, Whiting stores only a single copy of the file. (Whiting, Col. 5, lines 8-11). Further, Whiting's backup policy is the same for all sets of files, i.e., the policy looks to a set of file to determine which files fall into one of the four categories specified above. This is different than having a protection policy uniquely defined for each share of data on the fileserver, as recited in claim 1. The Examiner alleges that "each local machine may have a unique backup schedule configured. This backup schedule is part of the "protection policy". It is also noted that each user machine receives its own share of data on the server (see, [Whiting], 7:8-31)." (Office Action, page 20). Applicants respectfully disagree. Whiting fails to support Examiner's contention. It appears that Whiting includes a backup administrator that configures the backup system using administrator software function provided as part of Whiting's product. (Whiting, Col. 7, lines 19-21). The backup is then ran by a backup agent process for a network node that is selected by the backup administrator. (Whiting, Col. 7, lines 21-24). However, Whiting fails to disclose that it has a protection policy uniquely defined for each share of data on the fileserver, as recited in claim 1. To the contrary, it appears that the administrator runs the same backup process for all nodes and as such, there is no "unique backup schedule configured" for each machine. Hence, Whiting fails to disclose, teach or suggest all elements of claim 1.

Zayas fails to cure the deficiencies of Whiting either alone or in combination with Fujibayashi. As previously stated by Applicants, Zayas relates backup data and techniques for speeding up backup operations. (Zayas, Col. 1, lines 9-10). When Zayas creates a volume of files, a Modified Files List ("MFL") is established storing a file ID and an epoch timestamp (identifying an important point in time for the volume) is set. (Zayas, Col. 3, lines 38-40). The file ID identifies a file on the volume that has been modified since it was last archived. (Zayas, Col. 5, lines 31-34). Zayas' epoch timestamp identifies the first epoch in which the file identified by file ID was modified since it was last archived. (Zayas, Col. 5, lines 38-40). Zayas further enumerates and orders all identified files in the MFL that were first modified before the selected epoch. (Zayas, Col. 7, lines 16-18). In addition to Applicants' prior arguments, one having

ordinary skill in the art armed with the knowledge of Whiting and Fujibayashi would not look to Zayas to fill the gaps created by this combination. The combination of all three references still fails to address having two or more repositories configured to store a replica of a file, wherein a storage location and a number of replicas in each repository can be configured to change over time as well as the filter driver capturing the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, wherein the protection policy uniquely defined for each share of data on the fileserver, as recited in claim 1. Zayas with its creation of a modified file list, adds very little to the Whiting-Fujibayashi combination. With the addition of Zayas, this three-reference combination has the capability of which files may have been modified. While this information may be used by either Whiting, Fujibayashi or both during backup of its files or localized snapshot creation, it fails to suggest the elements of the above-referenced elements of claim 1.

Some of the disadvantages of Zayas is that it is an end user primary storage product, which means that if the storage is damages, all current data and any "snapshots" will be lost. The present invention solves this problem by allowing recovery of data from a repository in case of fileserver failure.

Thus, neither Whiting, nor Fujibayashi, nor Zayas, nor their combination disclose, teach, or suggest all elements of claim 1, and claim 1 should be allowed.

As stated in Applicants' prior responses, Belknap does not cure the deficiencies of the combination of Whiting and Zayas. Belknap discloses a media manager which incorporates an application program interface (API) for converting high-level generic commands into device-level commands for output to a media device. (Belknap, Abstract). Further, Belknap determines whether a media object is located within a multimedia data storage system by searching an index of media objects stored within the system. (Belknap, para. [0063]-[0064]). Belknap discloses an audio/video file media manager. For data directed to removable storage media, Belknap's media manager tracks which audio/video file was recorded on each medium (tape, optical disk, etc.). This is similar to a conventional backup catalog function.

Burns relates to constraining client-side differencing and two tape accesses for delta restore and eliminates the use of reverse delta chains. (Burns, Section 4.2). In order to update a

single version in the reverse delta chain, Burns' server must store two new files, recall one old file, and perform both the differencing and reconstruction operations. (Burns, Section 4.2).

However, the various combinations of Whiting, Fujibayashi, Zayas, Belknap and Burns fail to disclose, teach or suggest, *inter alia*, a fileserver configured to contain shares of data and to be connected with a repository, wherein two or more repositories are configured to store a replica of a file, wherein a storage location and a number of replicas in each repository can be configured to change over time; the fileserver includes: a filter driver configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred; the filter driver is configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, wherein the protection policy is configured to be uniquely defined for each share of data on the fileserver, as recited in claim 1. It should be noted that in order to show obviousness of a dependent claim, all of its elements, including the elements of an independent claim on which it depends, must be shown in the references.

Applicants further submit that on page 20 of the Office Action, the Examiner provided an incomplete response to Applicants' arguments concerning the above combinations of Whiting, Fujibayashi, Zayas, Belknap and Burns. Applicants respectfully request clarification of the Examiner's submission. Should the next office action be made final, Applicants respectfully petition withdrawal of its finality due to the incompleteness of the present office action.

Thus, the various combinations of Whiting, Fujibayashi, Zayas, Belknap, and Burns fail to render claim 1 obvious. As such, the rejection of claim 1 is respectfully traversed. Applicants respectfully request that the rejections of claim 1 are withdrawn and claim 1 is allowed.

Claims 3-6, 17, and 19-25 are not rendered obvious by the various combinations of Whiting, Fujibayashi, Zayas, Belknap, and Burns for at least the reasons stated above with regard to claim 1. As such, the rejections of claims 3-6, 17, and 19-25 are respectfully traversed. The Examiner is requested to reconsider and withdraw his rejection of claims 3-6, 17, and 19-25.

In the February 17, 2009 Office Action, the Examiner rejected claims 7-16, and 26 under 35 U.S.C. 103(a) as being unpatentable over various combinations of U.S. Patent No. 6,847,982 to Parker et al. (hereinafter, "Parker"), Fujibayashi, Zayas, "Deciding when to forget in the Elephant file system" to Santry et al. (hereinafter, "Santry").

In the Office Action, the Examiner stated that Parker discloses all elements of claim 7 except that it fails to teach "capturing a snapshot of the set of files at a particular point in time." (Office Action, page 11). It also appears that Examiner alleges that "[m]aintaining a list of modified and/or created files since last captured snapshot" is also taught by Zayas and not by Parker. (Office Action, page 11). The Examiner stated that Parker does not teach "wherein a storage location and a number of replicas of the version of the file can be configured to change over time (see paragraphs [0019]-[0020])", but that Fujibayashi discloses this element. (Office Action, page 12). The Examiner further stated that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Parker et al. by the teaching of "Zayas et al., since Zayas et al. teaches 'insertion and removal of entries in the MFL are performed by the storage system. When the first of a file's data and metadata bits are turned on, the storage system adds the file to the MFL. In this way a file is added only once to the MFL' (see 7:40-45)" and by the teachings of "Fujibayashi, since Fujibayashi teaches 'by locating data backups remotely, a customer can survive a disaster by restoring data using backed up data mirrored in a remote location that was unaffected by the disaster' (see paragraph [0002])." (Office Action, page 12). Applicants respectfully disagree and traverse these rejections.

Claim 7 recites, *inter alia*, a method for protecting data including storing a version of a file within a set of files on a primary disk storage system; capturing a snapshot of the set of files at a particular point in time based on a backup frequency defined in a protection policy; maintaining a list of modified and/or created files since last captured snapshot; examining the protection policy associated with the set of files to determine where and how to protect files associated with the set of files; and replicating the version of the file to two or more repositories specified by the protection policy, wherein the repositories include at least one of a local repository and a remote repository, wherein a storage location and a number of replicas of the version of the file can be configured to change over time; wherein the protection policy is configured to be uniquely defined for each set of files.

Applicants again reiterate and reincorporate their arguments submitted on November 21, 2008 herein by reference in their entireties. As previously stated, Applicants understand Parker to disclose an intelligent data inventory and asset management software system. (Parker, Col. 7, lines 18-23). The Parker system includes an Akashic File Clerk that maintains an inventory

database, which includes electronic signatures for every file on a work station and all new and changed files. (Parker, Col. 7, line 24-28). Parker allows a client to determine which files are critical and which are not critical, then Parker runs inventories to capture the files that have changed and forwards the changed files to an Akashic Vault for storage and processing. (Parker, Col. 7, lines 28-35). During inventories, Parker identifies files that have 1) changed since the last inventory, 2) been deleted since the last inventory, 3) been added since the last inventory. (Parker, Col. 8, lines 17-26). Parker's Akashic Vault is a computer that is attached as a node to the client's network which stores captured files. (Parker, Col. 7, lines 44-46). After capturing files, Parker's Vault generates reverse and forward deltas, then deletes the previous version and archives the newest compressed version of the file. (Parker, Col. 9, line 54 to Col. 10, line 4). Parker generates a list of forward delta(s) and copies of the new files and sends them to an offsite Library System. (Parker, Col. 10, lines 5-8). As stated in Applicants' November 21, 2008 response, this is different than replicating the version of the file to two or more repositories specified by the protection policy, wherein the repositories include at least one of a local repository and a remote repository, wherein a storage location and a number of replicas of the version of the file can be configured to change over time, as recited in the amended claim 7.

Parker discloses how files at a client system are check-summed to determine whether their content changes over time and only those files that are new or have changed are sent to the Akashic Vault. (Parker, Col. 7, lines 24-35). However, Parker's policy is not uniquely defined for each set of files, contrary to the recitation of the amended claim 7.

Fujibayashi and/or Zayas fail to cure the deficiencies of Parker for at least the reasons stated above with regard to the combination of Whiting, Fujibayashi and Zayas. The combination of Parker, Fujibayashi and Zayas still fails to disclose all elements of claim 7 including, but not limited to, *inter alia*, capturing a snapshot of the set of files at a particular point in time based on a backup frequency defined in a protection policy and replicating the version of the file to two or more repositories specified by the protection policy, wherein the repositories include at least one of a local repository and a remote repository, wherein a storage location and a number of replicas of the version of the file can be configured to change over time; wherein the protection policy is configured to be uniquely defined for each set of files.

Thus, the combination of Parker, Fujibayashi and Zayas fails to realize the present invention. The combination of Parker, Fujibayashi and Zayas stamps specific identified files with a file ID and an epoch time stamp that indicates time since prior backup. The combination enumerates and orders the files and removes from the Modified File List. Thus, for at least the reasons stated above and in Applicants' November 21, 2008 response, the combination of Parker Fujibayashi and Zayas fails to disclose, teach or suggest the above-referenced elements of claim 7.

As previously stated, Santry also fails to cure the deficiencies of either Parker, Fujibayashi, Zayas, or their combination. Santry discloses a file system that keeps old versions of the file for recovery purposes (Santry, pg. 111, section 1). Santry does not keep old versions of the files and only keeps a single current version. (Santry, pg. 113, section 3.3). However, neither Parker, nor Fujibayashi, nor Zayas, nor Santry nor their combination discloses, teaches or suggests the subject matter of claim 7. As such, the rejection of claim 7 is respectfully traversed and the Examiner is requested to reconsider and withdraw his rejection of claim 7.

Claims 8-16 and 26 are patentable over various combinations of Parker, Fujibayashi, Zayas, and Santry for at least the reasons stated above with regard to claim 7. As such, the rejections of claims 8-16 and 26 are respectfully traversed. The Examiner is requested to reconsider and withdraw his rejections of claim 8-16 and 26.

CONCLUSION

No new matter has been added. The claims currently presented are proper and definite. Allowance is accordingly in order and respectfully requested. However, should the Examiner deem that further clarification of the record is in order, we invite a telephone call to the Applicants' undersigned attorney to expedite further processing of the application to allowance.

Applicants believe that no additional fees are due with the filing of this Amendment. However, if any additional fees are required or if any funds are due, the USPTO is authorized to charge or credit Deposit Account Number: 50-0311, Customer Number: 35437, Reference Number: 25452-013.

Respectfully submitted,

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